Programs Branch User Report

NORMS AND SPECIAL CONSIDERATIONS FOR MMPI ADMINISTRATION WITH INCARCERATED NATIVE OFFENDERS

NO. 1984 - 15

Ministry of the Solicitor General of Canada

Secretariat

J. S. Wormith
Research Division

Mark Borzecki
Research Consultant

Walter H. Black
Research Psychologist

NORMS AND SPECIAL CONSIDERATIONS FOR MMPI ADMINISTRATION WITH INCARCERATED NATIVE OFFENDERS

NO. 1984 - 15

The views expressed in this working paper are those of the authors and are not necessarily those of the Ministry of the Solicitor General of Canada. This working paper may not be published, cited or reproduced without permission of the Ministry.

This working paper is available in French. Ce document de travail est disponible en français.

ABSTRACT

A study was undertaken to determine native versus nonnative MMPI differences, and to assess the effect of vocabulary skills on these differences. Using Canadian Prairie incarcerates, it was found that the MMPI was able to differentiate between previously diagnosed psychiatric inmates and regular inmates. Next, MMPI means of native and nonnative psychiatric inmates were compared while several key legal and demographic variables were held constant. Results revealed that natives scored higher on 11 of 13 scales. Differences on L, F, and Mf were significant. However, using WAIS Vocabulary (WAIS-V) scores and Age as covariates, natives obtained lower adjusted mean scores on 8 of 10 clinical scales, with significant differences on Mf and Pa. Moreover, WAIS-V achieved significant covariate effects on 10 of 13 scales. Correlational analyses revealed inverse relationships between WAIS-V and MMPI for both racial groups. Relationships for Age with MMPI were inverse for nonnatives, yet positive for natives. Positive Age correlations for natives were interpreted in terms of older natives having more poorly developed vocabulary skills. Additional analyses revealed a general and significant elevation of Canadian MMPI scores over a similar American sample. Results were discussed in terms of a general cultural elevation for Canadian samples, and the need for either an age-graded vocabulary skill compensation for native MMPI's or the generation of native norms.

ACKNOWLEDGMENTS

The authors are indebted to the Regional Psychiatric Centre (Prairies): Dorothy Reid for her assistance in test administration, Tracy Pytlowany, Eric Smith and Ingrid Draper for their coordinating the data collection over three years, and Rod Luciuk for his programming. We also wish to thank Dr. John T. Partington , Carleton University, for his helpful comments on an earlier version of this manuscript.

TABLE OF CONTENTS

PAGE

ABSTRACT..... i

ACKNOWLEDGEMENTS..... ii

INTRODUCTION..... 1

MODERATORS OF RACIAL DIFFERENCES IN THE MMPI..... 3

Ethnic Differences..... 3

Non-MMPI Diagnosis..... 7

Education..... 7

Intelligence..... 12

Language..... 14

Summary..... 18

NATIVES AND THE MMPI..... 19

METHOD..... 24

Subjects..... 24

Instruments..... 25

Procedure..... 27

Analyses..... 28

RESULTS..... 30

DISCUSSION..... 40

Scale Elevation..... 40

Highpoint Configuration..... 41

Regular versus Psychiatric Incarcerates..... 44

Native Comparisons..... 45

Interpreting Native Profiles..... 49

SUMMARY AND RECOMMENDATIONS..... 52

REFERENCES..... 55

FOOTNOTES..... 60

LIST OF TABLES

PAGE

TABLE 1

MMPI Means and Standard Deviations, Presented by Ancestry, for Federal Prairie Inmates in Traditional and Psychiatric Facilities..... 31

TABLE 2

MMPI Means and Standard Deviations for Panton's (1980) American Samples, and *t* Comparisons with Canadian Prairie Regional Prisoners..... 33

TABLE 3

A Comparison of Natives and Nonnatives on MMPI Scales, Controlling for WAIS Vocabulary and Age Of Admission..... 35

TABLE 4

MMPI Correlations with Age of Admission and WAIS Vocabulary Presented for Native, Nonnative and Pooled Samples..... 38

INTRODUCTION

In a comprehensive survey, Gendreau (1975) found that the Minnesota Multiphasic Personality Inventory (MMPI) is the most widely administered psychological assessment measure in Canadian correctional facilities. In that such a device may influence an inmate's assessment, institutional placement and treatment plan, it is imperative that this test be correctly used and interpreted.

In recent years, considerable concern has emerged over the possible misinterpretation of the MMPI when it is applied to subject samples which differ demographically or biographically from the original standardization sample of white, mid-western, middle-class Americans (Gynther, 1972; Butcher and Tellegen, 1978; Dietrich and Berger, 1979). Hence, much research has been directed toward determining the validity of the MMPI among disparate populations. Typically, the specific question posed is whether obtained differences reflect true differences in psychological adjustment or are a function of ancillary demographic and biographic variables.

A particularly contentious issue concerns the cross-racial and cross-cultural validity of the MMPI, since most racial minorities are demographically different from the original Minnesota standardization sample. This issue is particularly

relevant where clientelle are ethnically heterogenous. One such setting is the correctional system where, for example, 10% of the inmates in the Correctional Service of Canada are of native ancestry (i.e., Status and Non-Status Indian, Metis and Inuit; Correctional Service of Canada, 1982).

The current report reviews cross-racial and cross-cultural MMPI research, assesses the pathology-versus-demography issue, and considers the testing of native offenders.

MODERATORS OF RACIAL DIFFERENCES IN THE MMPI

Ethnic Differences

Most findings concerning cross-racial MMPI testing come from studies of blacks or Hispanic Americans versus whites. Since many of the conclusions represent important considerations for the testing of other ethnic groups, including natives, these studies warrant discussion. Investigations concerning nonnatives comprise the first portion of this review.

In the first major review of MMPI racial differences, Gynther (1972) notes a remarkable consistency in that blacks continually score higher than whites on scales Sc and Ma. However, Gynther cautions that it would be untenable and overly simplistic to conclude greater psychopathology among blacks since the observed differences are more likely attributable to values, perceptions and expectations intrinsic to black culture.

In addition, Gynther (1972) claims that the degree of MMPI race differentials "appears to be affected by such variables as education, residence and cultural separation," (p.390). In this statement, Gynther (1972) identifies a set of potential moderating variables which may be largely responsible for the amplification or attenuation of MMPI racial differences. However, Rosenblatt and Pritchard (1978) note that the empirical basis for Gynther's conclusions is unclear, since only one of the studies he reviewed was conducted using a factorial design to

assess the relative effect of the hypothesized moderating variable. Moreover, many of the studies reviewed by Gynther have been criticized elsewhere because they lacked appropriate controls for important legal and demographic variables which may have skewed black MMPI scores in the direction of deviancy (eg. Dietrich and Berger, 1979). Following Gynther's review, many studies have addressed the relative MMPI variations associated with race and demographic factors.

In an investigation of 240 Mexican-American and Anglo-American psychiatric patients, Hibbs, Kobos and Gonzalez (1979) found ethnicity, age, and sex to all be "potent" sources of variance on the MMPI. Using a 2-by-2-by-5 (race-sex-age) factorial design, Hibbs et al. (1979) obtained significant main effects for race, whereby Mexican-Americans scored higher on scales L and F. There also emerged an ethnicity-by-sex interaction where Mexican-American females obtained higher scores on Hs and Pa. Hence, cultural factors appear to be the primary source of variance with respect to Mexican-American L and F elevations, but Hs and Pa elevations are moderated by sex. Other results included main effects for sex on Hs, Ma and Mf, main effects for age on Pd, Pa and Hs, and an age-by-sex interaction on K.

The findings of Hibbs et al. are congruent with the position that differences between ethnic/racial groups cannot be attributed to cultural factors alone. In fact, the "examination of primary sources of variance beyond ethnicity yields results

which were masked in earlier studies," (p.595). Moreover, their findings illustrate the sensitivity of the MMPI to age and sex variables.

Another group of researchers (McCreary and Padilla, 1977) addressed the issue of socioeconomic status with regard to cultural bias on the MMPI. These investigators compared 40 black, 36 Mexican-American, and 267 white male offenders, referred to a legal psychiatric clinic for pre-sentencing evaluation, on both individual scales and MMPI type. Comparisons by type were made according to Goldberg's (1972) classification rules, where a particular MMPI profile falls within one of three major groups (listed in order of ascending specifity): normal versus deviant (ND), sociopathic versus psychiatric (SP), and psychotic versus neurotic (PN). Profile validity criteria were imposed whereby a profile was only included if less than 30 items were left unanswered, F<23 (raw score), and F-K<11 (raw score).

The study comprised two stages. First, unmatched comparisons, and second, comparisons on which subjects were matched for education and occupation. Their hypothesis was that differences due to cultural factors would appear in both sets of comparisons, whereas differences attributable to socioeconomic factors would emerge in only the unmatched comparisons. Analyses revealed that in unmatched comparisons, blacks scored significantly lower than whites on the Hy and Mf scales, yet in the matched comparisons scored significantly higher on K and Ma; Hy remained significantly lower for blacks in the matched

comparison. Mexican-Americans scored higher than whites in the unmatched comparisons on scales L and Hs, yet higher on L and K in matched comparisons.

In discussing their results, McCreary and Padilla (1977) conclude that cultural factors are important for black differentials on Ma, and to a lesser extent on scales K and Hy as well. Conversely, socioeconomic factors seem responsible for the black/white Mf differential. L and K differences for Mexican-Americans differences reflect cultural factors, whereas Hs differences are primarily socioeconomic.

In the racial comparisons of MMPI type (Goldberg, 1972), Mexican-Americans scored well into the psychiatric range on the SP index relative to whites. All other between-group comparisons were nonsignificant. It is noted that the pattern of results was the same in both unmatched and matched comparisons. Importantly, McCreary and Padilla (1977), are reluctant to conclude that the score in the direction of "psychiatric" for the Mexican-Americans is indicative of a culturally-based misdiagnosis for this ethnic group. They speculate that the referral process may require Mexican-Americans to appear more "disordered" in order to be referred for legal-psychiatric assessment. Indeed this point is not typically acknowledged in ethnological studies of mental health. Notwithstanding the preceding, McCreary and Padilla conclude that both socioeconomic and cultural factors contribute to observed differences between these three racial groups on the MMPI.

Non-MMPI Diagnosis

The issue of diagnosis has already received brief consideration from McCreary and Padilla (1977). Further to this, studies by Davis and Jones (1974) and Davis (1975) revealed that among randomly selected, hospitalized psychiatric clients, blacks had been classified as psychotic more often than their white counterparts - independent of the MMPI. However, as noted by McCreary and Padilla (1977), these findings might not indicate cultural misdiagnosis, but actual race-related variations in pathology, where minority members must appear more disordered to be referred. Such findings are quite important where the MMPI is concerned. Specifically, if black psychiatric clients are randomly selected for MMPI research, elevations on select scales would automatically be expected since more blacks would be defined as schizophrenic in the first place. From this, it is cautioned that previous diagnosis be explicitly controlled for if 'true' race differentials are to be isolated (Davis and Jones, 1974; Davis, 1975).

Education

Following Gynther's supposition that MMPI racial differences are attenuated among better educated groups, research has subsequently been directed at the moderating effects of education levels.

In one such study, Davis, Beck and Ryan (1973) found that blacks scored significantly higher than whites on scales F, Pd and Sc, among groups of randomly selected hospitalized schizophrenics. These results were consistent with previously reported, non-controlled race-related research (Gynther, 1972). It is noted that there was a significant difference with respect to education, in that blacks had completed fewer years of school than their white counterparts.

In the second part of the Davis et al. (1973) study, 80 schizophrenics were grouped according to race and education (greater or less than 12 years) in a 2-by-2 design. Groups were equated for age. The only main effect due to race was whites' elevation on the D scale, a result inconsistent with past research. However, main effects for education were found on Hs, Pd, Pa and Sc, where poorly educated subjects obtained the higher scores in all cases. There were no significant interactions.

There are several important points to be made from this study. First, the more pathological black results, where education factors were not controlled for, cannot be attributed to racial differences in the psychiatric referral process, since the non-MMPI diagnoses were identical for each group. Second, when educational experience is controlled for, previous racial differences virtually disappear. Moreover, the scale elevations for the educationally disadvantaged versus educationally advantaged occurred regardless of race. This would seem to indicate that limited educational experience, and not ethnicity,

is the important variable to which previous minority differences on the MMPI might be attributed. However, failing replication, the small sample size of this study renders such a conclusion tentative (Butcher and Tellegen, 1978).

Two additional studies (Davis and Jones, 1974; Davis, 1975) also indicate that education operates as a moderator variable, but does not completely override race differences, as it is suggested by Davis et al. (1973).

Davis and Jones (1974) systematically varied education (greater of less than 12 years), race (black-white) and non-MMPI diagnosis (schizophrenic-nonschizophrenic), in a 2-by-2-by-2 factorial design. The 8 groups (20 cases per cell) were matched for age, and protocol validity restrictions were imposed whereby those with [F-K]>14 were excluded. Davis (1975) examined race (black-white) and diagnosis (schizophrenic-nonschizophrenic) through a 2-by-2 (N=80) factorial design. Only subjects with over 11 grades of school completed were included in the Davis (1975) sample. Both studies used randomly selected, hospitalized male psychiatric military veterans.

With the clinical scales as dependent measures, Davis and Jones (1974) found no significant main effects for race. However, as expected, schizophrenics scored higher on Pa and Sc than nonschizophrenics. In addition, the low education group scored higher than the high education group on Sc. Significant race-by-education effects emerged on Pa and Sc. Poorly educated blacks scored higher poorly educated whites, and well educated

blacks and whites. Considering the results of Davis (1975), schizophrenics scored significantly higher on scales F and Sc, while lower on Pd. No significant main effects were found for race.

Importantly, the results of Davis (1975) and Davis and Jones (1974) are consistent in that increased education, operationally defined as over 11 grades completed, tends to mask differences attributable to acculturalization. These findings stand somewhat in opposition to those of Davis et al. (1973), in that race related effects were not eliminated when education was allowed to vary as an independent measure. However, since the Davis and Jones (1974) study used twice the sample size (160 versus 80), more credibility is given to the more recent findings. Hence, educational deprivation is not the primary factor behind differences in MMPI performance. Race differentials do exist, but they seem to be restricted to lower education groups.

Cowan, Watkins and Davis (1975) extended the study of Davis and Jones (1974) by investigating the ability of the MMPI to discriminate between schizophrenic and nonschizophrenic, black and white groups, when education and previous diagnosis were varied systematically. Using the same data collected by Davis and Jones (1974), Cowan et al. blindly classified individual participant's MMPI protocols as either schizophrenic or nonschizophrenic, according to two rules derived from previous research: Sc>[T=70], and Sc>Pt. Among nonschizophrenic group

protocols, 3 of the 4 groups were correctly classified "significantly more often than would be expected by chance," (p.443). However, approximately one half of the poorly educated black nonschizophrenics were misclassified as schizophrenic on the basis of their MMPI protocols. These findings extend those obtained by Davis and Jones (1974) and Davis (1975) by demonstrating the reduced diagnostic discriminative power of the MMPI for blacks with fewer than 12 years of education. Therefore, where education levels are below 12 years, the MMPI appears to portray minorities as more maladjusted, independent of pathology.

In general terms, it seems that advanced education has an inculturating effect on minority groups whereby it provides them "with enough communality of experience" with white culture, "to mask whatever culturally determined differences may have been learned in the home or in the streets," (Davis, 1975, p.139). This being the case, one is compelled to explain what factor(s) indigenous to the minority culture present them as more pathological on the MMPI. Davis and Jones (1974) provide a rather elaborate theory in explanation.

Specifically, they propose that blacks may be represented on a continuum where they display degrees of suspiciousness and alienation from a dominant white society. This alientation is, in turn, manifest in more pathological MMPI profiles. In addition, the "more sensitive and suspicious" blacks tend to exit the school system earlier than those less alienated. Those

minority individuals who continue academically not only perceive themselves as being less alienated, they are also more likely to assimilate the values of the dominant culture. This assimilation is reflected in MMPI protocols which do not significantly differ from those of whites (Davis and Jones, 1974, p.679; Gearing, 1979). Despite the intuitive appeal of this hypothesis, it has several shortcomings.

Intelligence

The idea of the selection process is interesting, but it neglects the fact that it may not only be the most socioculturally alienated blacks who cannot cope with, and hence exit, the predominantly white school system. Alternately, those with limited intellectual capacity may also be disproportionately represented among minority drop-outs. Using the reasoning of Davis and Jones (1974), such individuals will not experience the assimilation of white cultural values which accompanies increased educational exposure, thus resulting in elevated MMPI's. A study by Rosenblatt and Pritchard (1978) supports this stance.

These authors compared 104 black and 109 white male inmates on the MMPI, with respect to differences on the Wechsler Adult Intelligence Scale (WAIS). Racial groups were dichotomized about the overall median intelligence quotient (IQ) of 93; the separation between high and low IQ groups was slightly over one WAIS standard deviation (SD=15). No racial differences were

found among the high IQ groups, but low IQ blacks scored significantly higher on scales Hs, Sc and Ma, and significantly lower on the Hy scale, compared to low IQ whites. These results were replicated by the same authors in a larger cross-validation study. As noted by Rosenblatt and Pritchard (1978), this pattern of low IQ group racial differences is precisely the pattern identified in Gynther's (1972) review as the most consistently obtained black/white MMPI differences. In addition, there is some correspondence between the IQ-moderated racial differences found here and the education-moderated racial differences found by Davis and Jones (1974). More precisely, each study obtained differences on Sc where low IQ and low education blacks scored higher than other groups. Hence, the separation between the moderating effects of IQ and education may not be so clear.

In sum, the findings of Rosenblatt and Pritchard (1978) indicate that if a selection process is to be assumed, one has to consider intellectual shortcomings, in addition to pervasive feelings of alienation and suspiciousness, as possible factors in the school drop out rates of minority group members - these factors indirectly inflating MMPI scores.

Language

A second problem with the Davis and Jones (1974) hypothesis on cultural factors is its complexity. Some might question the utility of resorting to such constructs as 'alienation' and 'suspiciousness,' where simpler, more testable explanations are possible. Accordingly, a more plausible explanations is offered.

It has been suggested that although overt language difficulties may not arise in ethnic MMPI testing, there may exist subtle differences in the culture-specific interpretation and comprehension of word meanings and phrases which cause the minority group to score more pathologically (eg. Hibbs et al., 1979; Pollack and Shore, 1980). This contention is supported by the findings that IQ and education are potent MMPI race moderators. Considering education, the interpretation and comprehension of words according to dominant norms are particularly essential in the more advanced academic system, hence the 'inculturating' effects of higher education.

With respect to intelligence, minority individuals of lower intellectual capacity will likely experience greater cognitve confusion over contrasting bicultural concepts and the semantic/grammatical idiosyncracies of the dominant culture's spoken and written word, hence their more pathological MMPI performance. It is noted by Seyfort, Spreen and Lahmer (1980), that this bicultural confusion is further compounded by varying degrees of bilingualism. In short, the apparent pathology of

minorities may be nothing more than differences in culturally-mediated interpretation of words. Since white interpretations are the basis of evaluation on the MMPI, it is fair to say that observed racial differences may largely be a function of differential vocabulary skills.

In one study addressing the issue of language, Leff (1977) demonstrated that patients from varying cultures display a differential ability to distinguish between certain affective states, and that these differences can in fact be documented in structured psychiatric interviews containing many items similar to the MMPI. Leff took material developed initially for the World Health Organization's International Pilot Study for Schizophrenia, and produced a standardized psychiatric interview. The actual interview was translated from English into 5 Indo-European languages: Czech, Danish, Hindi, Russian and Spanish; and two non-Indo-European languages: Yoruba and Chinese. Leff's findings indicated that patients speaking Indo-European languages can easily distinguish affective states such as anger from depression and anxiety, yet the non-Indo-Europeans cannot do the same. The implication is that the differential in discriminating ability could easily raise select scores on the MMPI. These findings could have important ramifications for the assessment of Indian clients since they are often raised in a non-Indo-European culture (Pollack and Shore, 1980).

Elsewhere, Glatt (1969) administered the French, Spanish,

and German translations of the MMPI to fluently bilingual subjects who completed the test in its standard English form and one of the three other languages. His intent was to demonstrate that the translated forms of the MMPI "conveyed the same meaning as the English version," (p.65). However, the results displayed a general elevation of scales on the translated tests relative to the English version. Marked elevations of over T=5 points were found on scales F, Pd and Sc for all three translations. Elevations of such a magnitude could have marked "clinical consequence," (Glatt, 1969). It is of interest to note that two of the three largest mean differences for the Spanish translation were found on scales L and F. Recall that differences on these scales represent the most common findings when the standard version of the MMPI is administered to Hispanic and Anglo-Americans (Hibbs et al., 1979). Therefore, this study supports the hypothesis that culturally-mediated, differential item interpretations affect MMPI performance.

In a third study, Gaines and Morris (1978) revealed an important relation between WAIS measures of vocabulary skill and minority MMPI performance. Using a sample of 272 psychiatric patients, these authors sought to investigate the relationships between the MMPI and WAIS subtest scores. Generally, WAIS subtest scores were not related to MMPI-determined psychopathology. However, there was a significant relationship between WAIS Vocabulary and several MMPI clinical scales (Pd, Pa, Pt, Sc and Ma), indicating that poor vocabulary skills are

associated with elevations on select MMPI scales.

These authors also assessed the effects of sex, ethnicity, and education on WAIS Vocabulary. Although there were no sex related differences, significant ethnic and educational differences did emerge. Anglo-Americans scored higher than Mexican-Americans, who in turn, scored higher than blacks. Those with 12 or fewer years of education scored lower than those with more than 12 years educational experience. A race-by-education analysis was not performed. Hence, this study has demonstrated that, relative to majority standards, minorities display poor vocabulary skills which, in turn, appear to be associated with more pathological MMPI performance.

Considering the preceding three studies, Leff (1977) documented differences in affect discriminating ability between Indo- and non-Indo-Europeans. Next, Glatt (1969) related these differences to the MMPI, and in a much more focused sense by showing that scale elevations are manifest even within Indo-European languages where English is used as the standard. Together, these two studies demonstrate that translations of the MMPI generate more deviant responding, independent of pathology. The study of Gaines and Morris (1978) reveals that vocabulary skills could be the specific linguistic factor leading to the apparent ethnic MMPI elevations. Hence it is contended that many of the previously reported minority elevations are the result of poorly developed vocabulary skills, and are not caused by suspiciousness, alienation, or differential referral processes.

Summary

The preceding section dealt with important moderators of MMPI racial and ethnic differences. Although the research cited was concerned primarily with blacks or Hispanic Americans versus whites, the recognition of sex, age, previous diagnosis, education, IQ and language as moderators are generally applicable in the study of MMPI minority differences.

The next section summarizes MMPI research conducted on native-nonnative differences. Investigations of both Canadian and American natives are cited. The literature is considered in terms of the attempts to control for the above noted variables since the credibility of these studies is at issue.

NATIVES AND THE MMPI

There are few well-designed MMPI studies of natives (Page and Bozlee, 1982). Typically, where racial differences are reported, these are confounded by situational and demographic variables. For example, in one of the first of these studies (Arthur, 1944), American native reserve students, living in boarding schools, were compared to urban nonnative college freshmen. Native elevations were recorded on scales D, Pd and Sc, but the comparison of groups from differing settings causes situational confounding. In addition, dubious statistical methods were employed in that natives' median scores were compared against nonnatives' mean scores in the test of differences. Moreover, the study was completed so long ago that it is of little current utility because of the dynamic properties of MMPI group norms (Gendreau, Grant, Leipciger and Collins, 1979). Therefore, no conclusions can be drawn from this study.

Elsewhere, Valliant, Asu and Howitt (1983) examined differences between Canadian natives and nonnatives who were either offender or nonoffender juveniles. Male subjects were administered a large test battery which included scales Hy to Ma (3 to 9) of the MMPI. Offenders scored higher than nonoffenders on scales Hy and Sc, and natives scored higher than nonnatives on Pd, Pa, Pt, Sc and Ma. In addition, there was a significant interaction on Pd where nonnative nonoffenders scored significantly lower than all other groups.

Although these results support popularly held notions, including the belief that there is greater pathology among minority groups regardless of legal status (Gynther, 1972), the study has a number of shortcomings. First, the extremely small samples of 13 native and 24 nonnative offenders, and 21 native and 14 nonnative nonoffenders render the findings tentative (Butcher and Tellegen, 1978). Second, groups were not matched on age or education. Although similar ages may be assumed since all were juveniles, education levels probably differed since offenders were in special training schools, but nonoffenders were in traditional secondary schools. Furthermore, there was no indication as to how the groups fared in terms of the 11th grade cutoff, found to be important regarding the moderating effects of education (Davis and Jones, 1974). These drawbacks preclude reasonable conclusion.

Two additional studies are provided by Page and Bozlee (1982), and Uecker, Boutilier and Richardson (1980). Male Indian, previously diagnosed alcoholics from Veterans' Administration (VA) hospitals were compared to their nonnative counterparts. The advantage of using VA patients' is that subjects share similar military experience. Uecker et al. matched 40 Indians with 40 whites on age, education and duration and severity of drinking. Page and Bozlee (1982) equated their groups of 11 Indians, 11 Hispanic Americans and 11 Anglo Americans on age and education.

Uecker et al.'s (1980) Indians scored significantly lower

than whites on scales Pd and Mf. In addition, mean MMPI profiles were remarkably congruent across races, with similar highpoints emerged on D, Pd and Pt, although Indians tended to score slightly lower overall. Page and Bozlee (1982) obtained only one significant difference in that Hispanic Americans' D scores were higher than those of both Indians and Anglo-Americans. Unlike Uecker et al.'s (1980) finding, Page and Bozlee (1982) note a complete absence of spikes on Pd for natives. However, the small sample size of the latter study suggests that its findings are less reliable.

Two final studies are of importance. These studies investigated the validity of the MMPI with respect to native American psychiatric clients (Pollack and Shore, 1980), and Canadian native psychiatric inmates (Mandelzys and Lane, 1980). Pollack and Shore (1980) assembled protocols of 142 Pacific Northwest Indians and analyzed them with respect to age, sex, non-MMPI diagnosis, and tribe. The finding of interest is that there emerged highpoints on Sc, Pd and Pa for all groups regardless of whether they were differentiated according to age, sex, diagnosis, or tribe. However, elevations on D, Hy, Pa, Pt and Sc were evident for the more versus less pathological group (schizophrenics and depressives versus antisocials and alcoholics). In view of the similar highpoint configuration among the differing groups, Pollack and Shore suggest that cultural factors may disguise individual differences in personality and pathology for American Indians. They further

speculate that the high incidence of mean T scores above 70, on scales where the highpoints were found, may have partially reflected language difficulties which inaccurately emphasized selected scales, since all groups obtained these scale highpoints.

Mandelzys and Lane (1980) attempted to establish the validity of the MMPI on 95 native Canadian inmates, by examining its relationship with key social and criminal history variables. They concluded that the MMPI is invalid for Canadian native incarcerates since it did not significantly relate to any of the variables they tested. However, it has been found elsewhere that the MMPI does not correlate with many social/criminal variables, even for nonnatives (Gearing, 1979). It is also noted that Mandelzys and Lane (1980) found a highpoint configuration of F, Sc and Pd for their Canadian native incarcerate sample. Since this pattern is highly similar to that found by Pollack and Shore (1980) among American psychiatric natives, one might speculate that such a profile does reflect cultural factors. However, these consistencies may be irrelevant if the profiles do not differ from similar nonnative incarcerate or psychiatric samples.

In summary, research on the validity of the MMPI with natives is scarce. Moreover, many of the studies are methodologically weak because of small sample sizes or failure to control for key demographic and situational variables. The most interesting results come from Pollack and Shore (1980) and Mandelzys and Lane (1980), where larger samples were employed and

consistent highpoint configurations were found. However, their shortcoming is that the natives were not compared to a similar nonnative sample.

From the preceding section it is apparent that additional work should be undertaken concerning natives and the MMPI. Furthermore, it was suggested earlier that direct investigation of the moderating effect of vocabulary skills on cross-cultural MMPI differences be performed.

Toward these ends, the following study examines native versus nonnative differences, and the moderating influence of a number of variables, including WAIS-determined vocabulary skill.

METHOD

Subjects

Participants were inmates of the Regional Psychiatric Centre (Prairies), a maximum security psychiatric prison for males, operated by the Correctional Service of Canada. Inmates are referred to this institution by court, the parole board, and case workers from other correctional institutions. Subjects in the present study were successive first admissions to the facility between January, 1978 and September, 1982. Seventy-three percent, or 275 had completed the MMPI and declared their ancestry. Participants included 57 natives (status/nonstatus Indians, Metis and Inuit) and 218 nonnatives (Caucasians).

Legal and demographic characteristics of the 275 participants are as follows: (1) Mean age of admission, 28.41 (SD=9.06) years. (2) Mean education level, 8.92 (SD=2.39) years. (3) Marital status, 56.9% single, 9.6% married, 13.8% common-law, 1.6% widowed, 5.3% separated, and, 12.8% divorced. (4) Mean sentence length, 78.66 (SD=80.03) months. (5) Offense category, 29.6% sex offenses (violent rape, attempted rape, indecent assault), 27.0% crimes of violence (first and second degree murder, attempted murder, manslaughter, assault and assault causing bodily harm), 20.8% property offenses (arson, theft, fraud, forgery, extortion, possession or reception of stolen goods, unlawfully in a dwelling), 16.4% robbery and weapons

offenses (robbery, armed robbery, illegal possession of and concealing firearms, abduction, hijacking), and 6.2% miscellaneous offenses (narcotics, gaming/betting, parole violations, traffic violations, public disturbances).

A second set of data was obtained which represented Prairie regional MMPI norms for incarcerates in regular institutions. In the current study, these data served as a basis against which RPC MMPI results were compared. The 1327 protocols (298 native and 1029 nonnative) were collected from the six institutions in the Correctional Service of Canada's Prairie region, and comprised routine admissions over two years (1980-1982).

Instruments

Following is a description of the three assessment measures employed in the current study.

The Minnesota Multiphasic Personality Inventory (MMPI) is a self-report personality measure to which respondents answer "True," "False," or "Cannot say," on 550 affirmative statements (Dahlstrom, Welsh and Dahlstrom, 1975). The scale was developed to include several measures of psychopathology through criterion keying of items, "the criterion being traditional psychiatric diagnosis" (Anastasi, 1982, p.501). The MMPI consists of 10 clinical scales and 3 validity scales. The latter group is intended to indicate test-taking problems and peculiarities. Research with the MMPI is quite extensive and its validity as a

criterion measure is "comparitively well founded" (Butcher and Tellegen, 1978, p.620). Detailed descriptions of the MMPI and its psychometric properties are provided by Dahlstrom et al. (1975).

The Wechsler Adult Intelligence Scale (WAIS), and its revised form (WAIS-R), are used to assess general intellectual capacity. Items are organized into 5 subtests of performance IQ and 6 subtests of verbal IQ. Within subtests, items are arranged in order of increasing difficulty. The separate measures of verbal and performance IQ are combined to yield full scale IQ scores (Wechsler, 1958). The reliability and validity of the WAIS are well established (Anastasi, 1982). Reliability and validity data are summarized by Wechsler (1958) and Matarazzo (1972).

Blishen (1967) has provided a scale of socioeconomic status based on occupation. In developing the scale, 320 specific occupation types were gleaned from the 1961 Canadian census and arranged on a 100-point integer scale on the basis of the educational and income characteristics of the incumbents of the respective occupations. Higher scores indicate higher socioeconomic status. Sociometric details of the scale, including the Canadian socioeconomic status distribution, are summarized by Blishen (1967).

Since this measure determines status according to the dominant nonnative parameters of academics and income, it may be inappropriate for native northerners. For example, although

"trapper" is very low on the scale, in many small northern settlements most are trappers. Certain individuals are quite successful and are accorded high status by their peers for traditional skills (Partington, 1983). Nonetheless, Blishen's (1967) scale is considered appropriate to the current study in that few subjects came from these small, remote settlements and our intent is to determine socioeconomic status in terms of national and not community standing.

Procedure

The MMPI, WAIS, and other psychological tests were administered to newly admitted inmates who consented to pychological testing as part of their assessment process upon admission. All data were collected within 3 weeks of an offender's referral. Extensive personal histories and psychiatric interviews were conducted by clinical staff.

K-corrected T scores were used for all MMPI scales (Dahlstrom et al., 1975), and Vocabulary scale scores were taken from the WAIS (Wechsler, 1958). Psychiatric diagnoses were made according to the Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition (DSM-III) (American Psychiatric Association, 1980). These diagnoses were made by psychiatrists independent of MMPI scores.

Analyses

Test results were submitted to several levels of analysis. (1) RPC natives and nonnatives were compared on Age of Admission, Education Level, Marital Status, Socioeconomic Status, WAIS Full Scale IQ, Frequency of Offense Type, and Frequency of Psychiatric Diagnosis. These comparisons represent a check of intergroup equivalency on several key legal and demographic variables.

(2) MMPI comparisons were made between the Regional Psychiatric Centre (RPC) sample and the Prairie regional MMPI scale norms. Since the regional normative data included the RPC data, comparisons were conducted by first, an F test for homogeneity of group variance and second, a corresponding homogenous or heterogenous group *t* value computation. Tests of critical value were two-tailed. In all, this is a test of the ability of the MMPI to distinguish between psychiatric and general population inmates.

(3) MMPI native-nonnative *t* test comparisons were conducted for both the regional and RPC samples.

(4) Racial comparisons on the RPC groups' WAIS Vocabulary (WAIS-V) scores were performed to assess the relative vocabulary skills of these native and nonnative participants.

(5) RPC MMPI racial comparisons were made while controlling for WAIS Vocabulary and Age of Admission (ANCOVA). In addition, means adjusted for WAIS-V and Age of Admission were calculated for both natives and nonnatives. Details of computational

formulae used in adjustments can be found in Nie, Hull, Jenkins, Steinbrenner and Bent (1975, pp.400-410). These comparisons are more complex tests of racial differences on the MMPI in that they also assess the relative effect of Age and WAIS-V on MMPI scores. (6) Zero order correlations of MMPI scales with Age of Admission and WAIS Vocabulary were calculated for the RPC native, nonnative and pooled samples. These analyses add to ANCOVA results, described above, in that the direction and magnitude of the correlations may differ for the racial groups.

RESULTS

The first set of analyses revealed that RPC natives were younger than RPC nonnatives upon their current prison admission (25.93 vs. 29.10 years; $t[273]=2.33$, $p<.05$). However, groups did not differ on Education Level (8.47 vs. 9.12 years), Socioeconomic Level (39.19 vs. 39.53), WAIS Full Scale IQ (96.20 vs. 97.96), Marital Status, Frequency of Offense Type, and Frequency of Psychiatric Diagnosis. Upon admission to the RPC, 14.1% were diagnosed as psychotic, 1.6% as neurotic, 39.6% as personality disordered, 6.3% as sexual deviate, 4.2% as alcohol and/or drug dependent, and 34.4% as mentally retarded and/or other syndromes.

MMPI means and standard deviations representing Prairie regional incarcerate norms are presented in the top third of Table 1. This is followed by means and standard deviations for the RPC groups, and results of the *t* comparisons between psychiatric and nonpsychiatric groups, for both races.

Considering the Prairie regional norms, it is evident that only scales Pd and Sc exceed the T=70 cutoff point for the alleged identification of pathological deviations (Dahlstrom et al., 1975), in both native and nonnatives samples. In addition, F exceeds 70 for the native group. Regarding profile configurations, similar patterns emerge for both regional groups, with spikes on scales F, Pd, and Sc (F,4-8). From the above, one point of interest is the difference between the Prairie regional

formulae used in adjustments can be found in Nie, Hull, Jenkins, Steinbrenner and Bent (1975, pp.400-410). These comparisons are more complex tests of racial differences on the MMPI in that they also assess the relative effect of Age and WAIS-V on MMPI scores. (6) Zero order correlations of MMPI scales with Age of Admission and WAIS Vocabulary were calculated for the RPC native, nonnative and pooled samples. These analyses add to ANCOVA results, described above, in that the direction and magnitude of the correlations may differ for the racial groups.

RESULTS

The first set of analyses revealed that RPC natives were younger than RPC nonnatives upon their current prison admission (25.93 vs. 29.10 years; $t[273]=2.33$, $p<.05$). However, groups did not differ on Education Level (8.47 vs. 9.12 years), Socioeconomic Level (39.19 vs. 39.53), WAIS Full Scale IQ (96.20 vs. 97.96), Marital Status, Frequency of Offense Type, and Frequency of Psychiatric Diagnosis. Upon admission to the RPC, 14.1% were diagnosed as psychotic, 1.6% as neurotic, 39.6% as personality disordered, 6.3% as sexual deviate, 4.2% as alcohol and/or drug dependent, and 34.4% as mentally retarded and/or other syndromes.

MMPI means and standard deviations representing Prairie regional incarcerate norms are presented in the top third of Table 1. This is followed by means and standard deviations for the RPC groups, and results of the *t* comparisons between psychiatric and nonpsychiatric groups, for both races.

Considering the Prairie regional norms, it is evident that only scales Pd and Sc exceed the T=70 cutoff point for the alleged identification of pathological deviations (Dahlstrom et al., 1975), in both native and nonnatives samples. In addition, F exceeds 70 for the native group. Regarding profile configurations, similar patterns emerge for both regional groups, with spikes on scales F, Pd, and Sc (F,4-8). From the above, one point of interest is the difference between the Prairie regional

TABLE 1

MMPI Means and Standard Deviations, Presented by Ancestry, for Federal Prairie Inmates in Traditional and Psychiatric Facilities

	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si
Regional													
White	52.67	66.53	52.64	60.08	65.84	61.34	74.90	60.06	64.33	65.28	70.24	65.64	55.38
(n=1029)	(8.87)	(16.09)	(10.22)	(14.54)	(15.53)	(10.81)	(12.12)	(10.61)	(14.05)	(15.21)	(20.23)	(12.30)	(11.59)
Native	53.61	71.17	51.10	61.97	66.07	59.28	73.54	55.47	64.87	67.24	75.82	67.90	55.96
(n=298)	(9.91)	(16.19)	(9.71)	(14.31)	(14.40)	(11.01)	(11.37)	(9.08)	(14.57)	(14.42)	(20.22)	(12.41)	(9.44)
t(1325)	-1.57	-4.38***	2.32*	-1.98*	-.23	2.88**	1.73	6.78***	-.58	-1.98*	-3.44***	-2.79**	-0.70
Psychiatric Centre													
White	52.46	72.26	52.19	63.97	70.78	64.13	78.47	63.86	70.57	71.06	80.53	67.28	58.93
(n=218)	(9.48)	(16.96)	(11.41)	(16.28)	(18.19)	(11.17)	(12.66)	(10.81)	(16.13)	(18.15)	(24.60)	(13.52)	(10.97)
Native	55.18	77.12	52.88	68.23	71.81	64.19	79.16	58.44	69.74	73.70	86.37	68.98	59.38
(n=57)	(10.28)	(16.58)	(10.29)	(15.61)	(13.90)	(11.05)	(11.52)	(9.07)	(16.26)	(16.27)	(22.42)	(12.40)	(12.21)
t(273)	-1.89*	-1.94*	-.41	-1.77	-.40	-.04	-.37	3.48***	.35	-1.00	-1.62	-.86	-.25
Regional vs. Psychiatric Centre													
Nonnative t(1245)	-.31	4.73***	-.58	3.51***	3.72***	3.43***	3.92***	4.79***	5.30***	4.39***	5.75***	1.76	4.59***
Native t(353)	1.08	2.53*	1.26	2.98**	2.77**	3.08**	3.41***	2.26*	2.27*	2.71**	3.88*	0.60	2.12*

and American incarcerate MMPI norms. A second is the practical significance of the Prairie highpoint pattern with respect to previous research.

Concerning Canadian Prairie versus American incarcerate norms, comparison was possible using the most recently available data provided by Panton (1980, in Dahlstrom, 1983) pertaining to North Carolina offenders. Results of this analysis are listed in Table 2. Pronounced differences were found across the nations with the Canadian groups demonstrating higher mean scores in 22 of 26 comparisons. Such pervasive elevations would seem to indicate an artifactual cultural inflation of Canadian Prairie scores. This important finding will be returned to momentarily.

Referring back to Table 1, it is found that six scales exceed T=70 in the psychiatric group. Furthermore, mean RPC scores were significantly higher than those of the regional sample on all scales except L, K and Ma. With reference to the mean profile patterns of the RPC groups, high similarity to the regional profiles is found, with the exception that in the RPC Sc exceeds Pd, for both natives and nonnatives. This yields a highpoint pattern of F,8-4. In short, the MMPI has shown itself able to distinguish between psychiatric and general population inmates through significant overall profile elevations, and a subtle highpoint pattern difference.

Table 1 also displays both RPC and regional racial differences. Regional normative data indicate that natives score significantly higher on scales F, Hs, Pt, Sc, and Ma, and

TABLE 2

MMPI Means and Standard Deviations for Panton's (1980) American Samples, and t Comparisons with Canadian Prairie Regional Prisoners.[a]

Scale	North Carolina General Prisoners				American versus Canadia	
	Total n=2551		Indian n=153		Total t(3578)	Indian t(449)
	Mean	(S.D.)	Mean	(S.D.)		
L	51.4	(8.6)	54.5	(7.8)	3.12**	.98
F	57.9	(9.2)	59.9	(9.5)	20.06***	7.95**
K	52.5	(8.2)	52.7	(8.1)	.31	1.75
Hs	57.1	(13.4)	58.3	(12.9)	5.90***	2.69**
D	62.8	(11.7)	62.7	(10.0)	6.29***	2.61**
Hy	58.0	(9.9)	57.0	(9.6)	8.79***	2.19*
Pd	72.9	(10.4)	69.4	(11.6)	4.69***	3.59***
Mf	56.3	(8.6)	52.8	(8.4)	11.16***	3.06**
Pa	60.6	(11.6)	62.3	(11.9)	8.10***	1.90
Pt	60.7	(11.5)	62.0	(11.1)	9.83***	3.91***
Sc	63.6	(13.6)	64.5	(13.8)	11.32***	5.66***
Ma	64.0	(10.6)	62.4	(10.0)	3.90***	4.75***
Si	52.5	(8.4)	54.2	(8.4)	8.33***	1.99*

[a] *p<.05; **p<.01; ***p<.001; all test two-tailed.

significantly lower on K, Hy and Mf. RPC data indicate that natives score significantly higher on L and F, while significantly lower on Mf. The fewer natives-nonnatives differences found in the psychiatric population could be due to the restricted sample size. Alternatively, the process of offender selection for psychiatric referral may have a moderating effect on true differences.

Natives scored significantly lower than nonnatives on WAIS Vocabulary (8.12 vs. 9.28; $t[190]=1.94$, $p<.05$). Hence, the present analysis supports the often suggested, yet rarely evaluated contention that natives have more poorly developed vocabulary skills. It is noted that only 192 subjects (34 natives and 158 nonnatives) were administered the WAIS. However, this subsample did not differ from the full sample of 275 on any of the legal and demographic variables cited earlier, nor on socioeconomic status (Blishen, 1967), WAIS Full Scale IQ or MMPI scores.

Table 3 repeats the RPC MMPI racial comparisons, with Age and WAIS-V treated as covariates. Adjusted MMPI means, controlling for the effects of Age and WAIS-V, are also presented.

Considering the adjusted means, it is striking to find that the imposition of statistical controls has resulted in native scores being lower than those of nonnatives on 8 of 10 clinical scales, whereas natives scored higher on 8 of 10 unadjusted clinical scales. Moreover, the adjustment reduced the racial

TABLE 3

A Comparison of Natives and Nonnatives on MMPI Scales Controlling for WAIS Vocabulary and Age of Admission.

Scale	Mean, Adjusting for WAIS-V and Age		Covariates		Main Effect
	Native (n=34)	Nonnative (n=158)	WAIS-V F (1,189)	Age F (1,189)	Ancestry F (1,189)
L	55.59	52.53	0.44	4.78*	2.79
F	72.31	72.20	24.95***	1.39	0.01
K	55.91	51.26	7.71**	2.07	5.28*
Hs	64.88	63.76	14.86***	1.29	0.14
D	68.39	70.98	5.88*	0.01	0.59
Hy	63.20	63.64	1.96	0.77	0.04
Pd	77.60	78.13	0.08	0.22	0.05
Mf	59.06	63.23	9.85**	4.70*	4.70*
Pa	63.87	70.65	7.72**	0.01	4.70*
Pt	68.88	71.03	6.80**	2.20	0.40
Sc	78.33	80.55	12.05***	2.67	0.24
Ma	68.46	67.04	9.81**	4.71*	0.34
Si	55.54	59.59	3.97*	0.56	2.88

*p < .05; **p < .01; ***p < .001.

difference on the two scales (Hs and Ma) on which natives still had higher adjusted means. Considering the validity scales, native F scores were adjusted downward, eliminating the previous significant difference, native K scores were increased, creating a significant race differential ($p<.05$), and L scores remained essentially unchanged - although the racial difference was no longer significant. In spite of these adjustments, it is noted that scales F, Sc and Pd (F, 8-4) remain the highpoints for both races. In summary, MMPI scores of native offenders appear markedly affected by the test-taker's age and vocabulary skills.

Table 3 also reveals that WAIS-V covariation effects were significant on 10 of 13 scales, while Age covariation effects proved significant on 3 scales. The relative impact of WAIS-V and Age on scale adjustments can also be ascertained. Specifically, on the L scale, where Age effects achieved significance but WAIS-V effects were virtually zero, respective adjustments in means were .07 and .41, for natives and nonnatives. Contrastingly, the adjustments on scales where WAIS-V had significant covariation effects (eg. Pa, with repective native versus nonnative changes of 5.97 and .12) are much larger, indicating the stronger effect of WAIS-V on MMPI scores.

In addition to a general reversal in the direction of racial differences, the pattern of significant main effects was quite changed through statistical controls for WAIS Vocabulary, and to a lesser extent, Age of Admission. Comparing the main

effects for ancestry in Table 3 with the RPC *t* test differences from Table 1, it is apparent only Mf retains its significant difference across both analyses. Since WAIS-V was the only significant covariate on scales F, K and Pa, it is concluded that the initial, noncontrolled difference on F was an artifact of differential vocabulary skills, and vocabulary skills masked racial differences on K and Pa. Similarly, since Age was the only significant covariate on the L scale, the previous *t* test difference on L appears to be an artifact of Age.

Table 4 lists MMPI zero-order correlations with WAIS Vocabulary and Age of Admission for RPC natives, nonnatives, and the total sample. Generally, WAIS-V and MMPI scores vary inversely for both racial groups. Exceptions are found on scales K and Mf, which vary positively with WAIS-V scores. This finding is not unexpected in that K and Mf are inversely related to the clinical scales (Dahlstrom et al., 1975).

Racial differences on correlations between WAIS-V and MMPI scales were assessed by means of the Zr statistic. The only significant correlational difference was found on Ma, in that natives' Ma scores increased with increasing WAIS-V, while nonnatives' Ma scores decrease with increments in WAIS-V.

Regarding MMPI correlations with Age, little cross-racial consensus was found. Zr comparisons achieved significance on scales F, D, Hy, Pd, Pt, Sc and Si whereby natives' scores increased with Age, while nonnatives' scores decreased with Age. Conversely, on the L scale, natives' decreased yet nonnatives'

TABLE 4

MMPI Correlations with Age and WAIS Vocabulary Presented for Native, Nonnative and Pooled Samples.

	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si
Pooled Samples													
Age (n=275)	.13*	-.15*	.12	.02	-.01	.06	-.07	.16**	-.03	-.11	-.15*	-.16**	-.07
WAIS-V (n=192)	-.03	-.36***	.21**	-.27**	-.18**	-.10	-.03	.24***	-.20**	-.20**	-.26***	-.24***	-.16*
Natives													
Age (n=57)	-.12	.18	-.05	.20	.22	.28*	.16	.11	.14	.19	.10	.01	.17
WAIS-V (n=34)	-.04	-.31*	.09	-.31*	-.13	-.11	.08	.35*	-.10	-.08	-.32*	.09	-.29
Nonnatives													
Age (n=218)	.21**	-.20**	.16*	-.01	-.05	.01	-.11	.15*	-.07	-.15*	-.19**	-.19**	-.12
WAIS-V (n=158)	-.01	-.36***	.25***	-.26***	-.20**	-.10	-.04	.19**	-.24**	-.23**	-.26***	-.28***	-.16*
Zr Comparisons of Natives and Nonnatives													
Age	2.19*	2.49*	1.39	1.31	1.76*	1.75*	1.81*	0.24	1.33	2.24*	1.93*	1.30	1.91*
WAIS-V	.16	.27	.89	.25	.34	.05	.59	.84	.71	.83	.35	1.92*	.72

*p< .05; **p< .01; ***p <.001; all tests two-tailed.

scores increased with Age.

These results present an interesting possibility. If, in fact, a limited vocabulary leads to more pathological MMPI performance, it is possible that the positive correlations between natives' Age and MMPI scores is due to the inclusion of older natives with poor vocabulary skills in the sample. This contention is partially supported by the negative correlation between natives' Age and WAIS-V scores (-.16, ns.), and is understandable in that older natives frequently converse in their native language (Seyfort et al., 1980), and therefore would be less familiar with English vocabulary. Contrastingly, the correlation between WAIS-V and Age for nonnatives is positive (.10, ns.). The difference between the native and nonnative WAIS-V with Age correlations is nonsignificant.

DISCUSSION

Scale Elevation

The first point of discussion concerns the relative elevations of Canadian federal incarcerate MMPI's, and the extent to which these elevations reflect psychological adjustment versus other variables. Anastasi (1982) has noted that MMPI studies conducted in countries other than the United States found significant scale elevations, relative to similar American samples. The same phenomenon emerges in the current study, where the pervasiveness of scale elevations would seem to indicate a rather broad-based cultural influence serving to inflate Canadian scores.

However, it may be argued that the American and Canadian data sets are not comparable. Panton (1980) included the scores of his Indian group when calculating general prison population means, whereas the Prairie normative data were clearly separated according to ancestry. In reply, it is doubtful that the inclusion of Indian data in Panton's total prison population calculation would appreciably affect means, since the Indian group comprised just 5.9% of the total prison population sample. Similarly, one might argue that the presence of other racial groups might confound the results since Panton's data included blacks and the Canadian data did not. However, blacks typically score higher than whites (Elion and Megargee, 1975; Gynther,

1972; Costello, Tiffany and Grier, 1972). Hence the influence of black scores could only serve to reduce the discrepancy between between the American and Canadian samples. In addition, large N's used in calculating norms for both the American and Canadian groups would likely preclude gross differences attributable to various ancillary legal and demographic variables.

In the absence of data demonstrating that the trend of higher Canadian scores is indicative of worse psychological adjustment, it would appear that recognition should be given to the fact that there exists a culturally-based artificial inflation of Canadian Prairie incarcerate MMPI scores.

Highpoint Configuration

It is noted that the American versus Canadian differences were predominantly those of degree and not kind. For example, the samples from both countries demonstrated profile elevations on F and Pd. Although certain profile characteristics may be attributed to inmates' generally low educational and socioeconomic standing (Dietrich and Berger, 1979), other profile characteristics can be considered to reflect unconfounded personality attributes. Indeed, to the extent that criminal behaviour is predicated upon certain essential personality differences between offenders and nonoffenders, offender profiles should demonstrate certain unique aspects (Gearing, 1979). This is the case in the present study, where American and Canadian

inmates show similar profile peculiarities. Despite this, there did emerge subtle cross-national profile differences.

The F,4-8 configuration which emerged for the Canadian Prairie regional groups is not the "stereotypical" offender profile, with highpoints F,4-9, found elsewhere in Canada (Gendreau et al., 1979), and among Panton's (1980) North Carolina incarcerates. One major implication of this finding is that at least a portion of the research relating the F,4-9 profile to antisocial behaviour, of several different operational definitions (eg. Holland, Beckett, and Levi, 1981; Huesmann, Lefkowitz and Eron, 1978; Elion and Megargee, 1975), will necessarily be limited in its generalizability to Canadian Prairie federal offenders.

A second issue of importance is the fact that there has been a change in Canadian offender profiles over the last decade. In contrast to the present F,4-8 profile, available MMPI data for Prairie incarcerates from the years 1970 to 1975 (Wormith, 1975) reveal the typical F,4-9 offender configuration. Gendreau et al. (1979) report a similar phenomenon for Ontario delinquent samples, where Sc values presently exceed Ma scores - in the past the reverse was true.

Importantly, elevations on Sc, relative to all other clinical scales, have been found in a variety of psychiatric samples. For example, polydrug abusers (Penk, Roberts, Robinowitz, Dolan, Atkins, and Woodward, 1982), schizophrenics (Davis et al., 1973), and chronic alcoholics (Penk, Charles,

Patterson, Roberts, Dolan and Brown, 1982); relative elevations on Sc (8) appear to be more characteristic of psychiatric samples. Thus, the present Canadian incarcerate highpoint configuration shares similarities with both the traditional offender highpoint pattern (Pd elevation), and a common psychiatric sample pattern (Sc elevation).

Why has the Canadian offender MMPI profile changed? Gendreau et al. (1979) conclude that it may be attributed to changes in Canadian psychiatric referral systems, where "the correctional system is now catching some of the 'flow' which results from the marked reduction of housing capacity of...mental health settings," (pp.26-27). Hence, early discharge, denial of admission or inadequate treatment from psychiatric facilities may be increasing the number of psychiatric clients found in Canadian prisons. However, this conclusion is somewhat speculative and should not be taken as evidence that Canadian incarcerate groups are more psychopathological than their American counterparts.

As an aside, it is noted that although F represented one of the profile highpoints in the current study, all discussion has excluded this scale. Since F shares many items with Pd, Sc and Ma (Hedlung, 1977), elevations on F are to be expected where elevations exist on these three other scales, due to spurious positive correlations of overlapping elements (Budescu and Rogers, 1981). Indeed, F correlations with Pd, Sc and Ma were .53 ($p<.0001$), .57 ($p<.0001$) and .80 ($p<.0001$), respectively, for the total RPC sample. This high degree of item overlap has been

cited by critics of the MMPI as a major problem with the instrument. More importantly, it leaves the question of true national differences versus response set differences unaddressable.

Regular versus Psychiatric Incarcerates

The following concerns only the Canadian data, and refers to the fact that the MMPI has shown itself valid for discriminating psychiatric from regular prison populations. The RPC sample scored significantly higher than the regional sample on most individual scales, across both racial groups. Importantly, the present psychiatric prisoner data are consistent with those found by Mandelzys (1979) and Mandelzys and Lane (1980), in their analyses of Canadian Pacific coast psychiatric incarcerates, suggesting that the Prairie RPC means are not unique. In all, these results indicate that in order to use the MMPI as an accurate differentiator of pathological cases within a prison population, quite high scores have to be used as cutoff points, since regular prisoner scores already show substantial elevations.

Considering profile configurations, results of studies noted earlier revealed that nonincarcerate psychiatric samples often demonstrate highpoints on F, Sc and Pd (Penk, Roberts, Robinowitz et al., 1982; Penk, Charles, Patterson, et al., 1982; Davis et al., 1973), this being is the same configuration found

for the RPC samples. Hence, even though their differences with respect to the mean profile of regular Canadian incarcerates are not terribly pronounced, the RPC groups' highpoint profile more closely resembles that typically found for psychiatric samples.

To summarize, despite the fact that the Prairie region of the Correctional Service of Canada may be experiencing an inflow of psychiatric clients, the fact remains that the group of inmates designated as psychiatric prisoners, independent of MMPI indices, are definitely discernable from those not so designated through significant overall profile elevations, and a highpoint pattern of F,8-4 - one characteristic of nonincarcerate psychiatric groups as opposed to the F,4-8 of nonpsychiatric inmates.

Native Comparisons

One important issue is the comparability of the current native MMPI data to those of other native samples. Considering psychiatric clients, it was already mentioned that mean Prairie RPC scale scores were almost identical to those of the Pacific RPC sample (see Mandelzys and Lane, 1980). The one exception was somewhat higher Prairie Sc scores. Second, Pollack and Shore's (1980) nonincarcerate psychiatric Indians produced an identical overall highpoint pattern of F,8-4, although the Prairie RPC individual scale means are higher. However, recall that there was found a significant cross-national inflation, whereby

Canadian nonpsychiatric inmates scored higher than Americans on all the MMPI scales. The same effect may be operating for the psychiatric sample.

With respect to nonpsychiatric native samples, there is little correspondence, in terms of highpoint profiles or individual scale means, between the RPC and Valliant et al.'s (1983) data on Canadian native juvenile offenders and nonoffenders. However, Valliant et al.'s small sample size renders their findings somewhat unreliable. This is unfortunate since it is one of the few studies which administered the MMPI to natives who were neither offenders nor psychiatric patients. One other study carried out on nonoffender/nonpsychiatric natives (Arthur, 1944) was too methodologically weak to permit meaningful comparison.

Several points require mention concerning the present native versus nonnative differences. First, considering the changes which occurred in the pattern of main effects when WAIS-V and Age were statistically controlled, the importance of systematically dealing with ancillary variables becomes apparent, where 'pure' racial effects are sought. Indeed, even though the original racial groups were equivalent with respect to WAIS Full Scale IQ, Education Level, Socioeconomic Status, Marital Status, Offense Type and Psychiatric Diagnosis, the statistical controls for Age and WAIS-V still altered the pattern of race effects considerably, where only the Mf differential retained significance from unadjusted to adjusted means.

In comparing the RPC adjusted mean differences to findings obtained in other MMPI investigations of natives versus nonnatives (Uecker et al., 1980; Page and Bozlee, 1982; Valliant et al., 1983), the only congruent findings are those of Uecker et al. (1980). Specifically, both found native profiles to be lower in overall elevation, with the difference on Mf being significant. However, it was previously noted that the results of Page and Bozlee (1982) and Valliant et al. (1983) must be considered lightly, due to small sample sizes and/or other methodological flaws. Contrastingly, Uecker et al. (1980) used a large sample, and invoked controls for a number of ancillary variables.

A final racial MMPI difference for consideration is the relationship between scale elevation and Age of Admission. Natives' scores increased with age while nonnatives' decreased with Age. This result might suggest that MMPI scores should be age corrected where native groups are being tested, as native scores are typically compared to a nonnative standard. However, such a simple conclusion cannot be drawn. As noted earlier, the presence of older natives with poor English vocabulary skills may account for the positive correlations found between Age and MMPI scores among natives, in that poor vocabulary skills lead to more pathological MMPI responding. Recall that native elders frequently converse in their native language (Seyfort et al., 1980) and this fact could be responsible for their poor WAIS-V performance. This being the case, any age correction for natives

would have to be combined with WAIS-V correction. In all, these correlations provide an interesting result which require cross-validation with other samples.

In view of the preceding statements, several conclusions are presented. First, the general elevation of RPC native inmate MMPI's, both Prairie and Pacific, appears to be characteristic of psychiatric incarcerates, and not native incarcerates in general. This stems from the fact that nonpsychiatric native offenders scored significantly lower on individual scales. Second, since diverse native samples from the current and other studies share a similar highpoint configuration, it is likely that this specific profile reflects a significant cultural influence that overrides native subgroups' pathology or personality differences (Pollack and Shore, 1980). However, this conclusion is tentative since limited MMPI testing has been carried out with natives. Lastly, with appropriate controls invoked, previously obtained native elevations on select scales disappear. Hence, ancillary legal and demographic variables should not be underemphasized as possible contaminants of MMPI racial and cultural differences (Page and Bozlee, 1982).

Interpreting Native Profiles

In clinical terms, the significant racial differences may be interpreted as follows. Relative to their white counterparts, native psychiatric inmates are less likely to acknowledge symptoms as shown by higher K scores (Hedlung, 1977), they show more masculine vocational interests through lower Mf scores (Gearing, 1979), and demonstrate less delusions, suspiciousness, general distrust, thought disorder and sexual concern or preoccupation, as indicated through lower Pa scores (Hedlung, 1977; Gendreau et al., 1979). It is noted that in behavioural terms, these differences are only valid to the extent that these scales significantly correlate with criterion behaviours, correlations which are often quite modest (Hedlung, 1977).

Since WAIS-V has a strong inverse effect on MMPI scores and natives score poorly on WAIS Vocabulary, it appears that poor vocabulary skills contribute to natives' seemingly more 'pathological' MMPI scores. Hence, the present results confirm the assertion of Leff (1977) that although language may not be an overt problem, the comprehension and interpretation of word meanings can be a significant barrier to accurate cross-racial psychological assessment. Since WAIS Vocabulary measures word comprehension and interpretation in terms of white norms (Wechsler, 1958), it seems that allowances should be made for the vocabulary skills of Canadian Prairie native inmates when

personality tests, such as the MMPI, are interpreted in terms of white norms.

Accordingly, it is suggested that a correction factor be applied to Prairie natives' MMPI scores to compensate for their more poorly developed vocabulary skills. Specifically, a subtraction of T=3 points on all clinical scales except Mf, and an addition of T=2 points on validity scales L and K is recommended. Moreover, an age correction should be superimposed over the initial correction, since older natives score more poorly on WAIS-V. This age correction should be T=2 points for every decade above 20 years. Hopefully, native MMPI scores will not be erroneously skewed in the direction of psychopathology if this age-graded adjustment for vocabulary skill is undertaken.

An important qualification should be applied to the current findings of racial differences and the above suggestions for correction factors. All comments are made with respect to a sample of federally incarcerated offenders in the Canadian Prairies. However, the results may be applicable to other offenders or those with limited educational backround. Owing to the fact that education level is a powerful moderator of race differences, the proposed correction should only apply to groups of lower education levels. Recall that Cowan et al. (1975) and Davis and Jones (1974) suggested that increased education entails increased exposure to white society, with the 11th grade representing a critical point for the masking of race and cultural effects on the MMPI. It is noted that the present

sample had a mean education level of 8.92 years. Furthermore, higher education would also entail more cross-racial WAIS-V congruence, since comprehension and interpretation of words according to the dominant norms are essential for survival in the more advanced academic system. In short, suggestions for correction factors should not be generalized to groups of higher than grade 11 education.

SUMMARY AND RECOMMENDATIONS

The preceding findings suggest important considerations for the use of the MMPI. In terms of cultural/racial MMPI interpretation, two points are particulary noteworthy. The first is the recognition of an unspecified cultural influence where Canadian inmate MMPI scores are higher than American scores, independent of pathology or other, subordinate variables. The second is the recognition that an age-graded compensation factor is required for natives. It was noted earlier that by this system the older the native, the greater the correction. However, a more precise correction should be determined through subsequent research with a larger sample. The sample used in the present study is only large enough to determine a moderately accurate correction.

There exist two alternatives to performing such corrections. The first is to establish standardized norms for Canadian natives and compare subgroup results against these. The second is abandonment of the MMPI in favour of a more culture-free test of psychopathology. Indeed, even though the above proposed age-vocabulary correction might be made for native scores, it is likely that some differences accountable on the basis of race alone will be found. For example, the current results still showed significant racial differences on K, Mf and Pa after controls for extraneous variables were imposed. In such cases, it is apparent that an indigenous cultural agent separate

from deficits (relative to majority norms) in the interpretation and comprehension of words is operating, that causes significant differentials. Hence, one is still compelled to enquire as to what other cultural factors might be responsible for the differences. Regarding the use of a culture-free inventory, the obvious problem is finding a suitable replacement test, one which likely does not exist. In effect, the second alternative calls for the development of a culture-free test of psychopathology, clearly a formidable undertaking.

However, there would likely be resistance to the abandonment of the MMPI. Owing to the great momentum it has generated within research areas (Butcher and Tellegen, 1978) and its widespread use in the Canadian prison system (Gendreau, 1975), it would take some force to remove it from active service. It is difficult to leave behind nearly 40 years of data and move onto something else. In all, it is unlikely that work with the MMPI will be discontinued, at least within the prison system. This being the case, the current recommendation is either to apply the age-graded vocabulary correction factor or determine new native norms.

In general terms, the preceding investigation has quantified what Leff (1977) and Glatt (1969) initially investigated, in that the interpretation and comprehension of word meanings does have a significant effect on accurate psychological assessment of individuals, particularly with the MMPI. Although the present study focused exclusively on the

MMPI, it is entirely conceivable that the same sort of problem exists where other psychological tests are administered to natives. To quantify precisely the extent of vocabulary skill confounding which takes place in the testing of natives, and also with other ethnic or racial groups, is an issue which warrants further research.

In still more general terms, the present study joins a number of others which demonstrated that the strict control of ancillary variables is a necessity in cross-racial and cross-cultural psychological testing.

REFERENCES

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition. Washington, D.C.: American Psychiatric Association, 1980.

Anastasi, A. Psychological Testing, 4th Edition. New York: MacMillan, 1982.

Arthur, G. Experience in examining an Indian twelfth grade group with the MMPI. Mental Hygiene, 1944, 28, 243-250.

Blishen, B.R. A socio-economic index for occupations in Canada. Canadian Review of Sociology and Anthropology, 1967, 4, 41-53.

Budescu, D.V., & Rogers, J.L. Correlations for spurious influences on correlations between MMPI scales. Multivariate Behavioural Research, 1981, 16, 483-497.

Butcher, J.N., & Tellegen, A. Common methodological problems in MMPI research. Journal of Consulting and Clinical Psychology, 1978, 46, 620-628.

Correctional Service of Canada, Information Services. Native Population Profile Report. Ottawa: Correctional Service of Canada, 1982.

Costello, R.M., Tiffany, D.W., & Grier, R.H. Methodological issues and racial (black-white) comparisons on the MMPI. Journal of Consulting and Clinical Psychology, 1972, 38, 161-168.

Cowan, M., Watkins, B., & Davis, W. Level of education, diagnosis and race-related differences in MMPI performance.

Journal of Clinical Psychology, 1975, 31, 442-444.

Dahlstrom, W.G., Welsh, G.S., & Dahlstrom, L.E. An MMPI Handbook: Vol. 2. Research Applications. Minneapolis: University of Minnesota Press, 1975.

Davis, W.E. Race and the differential "power" of the MMPI. Journal of Personality Assessment, 1975, 39(2), 138-140.

Davis, W.E., Beck, S.J., & Ryan, T.A. Race-related and educationally-related MMPI profile differences among hospitalized schizophrenics. Journal of Clinical Psychology, 1973, 29, 478-479.

Davis, W.E., & Jones, M. Negro versus caucasian psychological test performance revisited. Journal of Consulting and Clinical Psychology, 1974, 42, 675-679.

Dietrich, S.G., & Berger, L.S. The MMPI in criminology: Abuses of application. Journal of Psychiatry & Law, Winter 1978, 453-480.

Elion, V., & Megargee, E.I. Validity of the MMPI Pd scale among black inmates. Journal of Consulting and Clinical Psychology, 1975, 43, 166-172.

Gaines, T., & Morris, R. Relationships between MMPI measures of psychopathology and WAIS subtest scores and intelligence quotients. Perceptual and Motor Skills, 1978, 47, 399-402.

Gearing, M.L. The MMPI as a primary differentiator and predictor of behaviour in prison: A methodological critique and review of the recent literature. Psychological Bulletin, 1979, 86(5), 929-963.

Consulting and Clinical Psychology, 1982, 50(3), 463-465.

Penk, W.E., Roberts, W.R., Robinowitz, R., Dolan, M.P., Atkins, H.G., & Woodward, W.A. MMPI differences of black and white male polydrug abusers seeking treatment. Journal of Consulting and Clinical Psychology, 1982, 50(3), 463-465.

Pollack, D., & Shore, J.H. Validity of the MMPI with native Americans. American Journal of Psychiatry, 1980, 137(8), 946-950.

Rosenblatt, A.I., & Pritchard, D.A. Moderators of racial differences on the MMPI. Journal of Consulting and Clinical Psychology, 1978, 46, 1572-1573.

Seyfort, B., Spreen, O., & Lahmer, V. A critical look at the WISC-R with native children. The Alberta Journal of Educational Research, 1980, 26(1), 14-24.

Uecker, A.E., Boutilier, L.R., & Richardson, E.H. "Indianism" and MMPI scores of male alcoholics. Journal of Studies on Alcohol, 1980, 14, 357-362.

Valliant, P.M., Asu, M.E., & Howitt, R. Cognitive styles of Caucasian and native Indian juvenile offenders. Psychological Reports, 1983, 52, 87-92.

Wechsler, D. The Measurement and Appraisal of Adult Intelligence. Baltimore: Williams and Wilkins, 1958.

Wormith, J.S. Unpublished data, Ministry of the Solicitor General (Canada) Corrections Research Division, 1975.

FOOTNOTES

The data for the current study were collected while the third author was Chief of Research for the Regional Psychiatric Centre (Prairies). The MMPI computer program was developed by the second author while under contract to the Correctional Service of Canada. All statistical analyses and preparation of the manuscript were undertaken by the first author while under contract to the Ministry of the Solicitor General (Canada) (service contract file no. 5440-1).